

REMARKS

This amendment responds to the office action mailed December 2, 2005. In the office action the Examiner rejected claims 1-20 under 35 U.S.C. 102(b) as anticipated by Lin (US 001/0020216).

After entry of this amendment, the pending claims are: claims 1-9 and 11-20.

Overview of Claim Changes

The limitation of claim 10 has been included in claim 9. Claim 10 has been canceled. These amendments, therefore, do not constitute new matter.

Detailed Response 35 U.S.C. §102(b)

In the present office action the Examiner has rejected claims 1-20 as anticipated by Lin. The Applicants disagree and traverse.

Independent claims 1 and 17, include the limitations of (A) performing dual-frequency navigation including corrections to an ionospheric model based on code and carrier-phase measurements and (B) performing backup navigation, when signals on the first frequency are lost, by synthesizing a carrier-phase measurement on the first frequency from a carrier-phase measurement on the second frequency and from corrections to the ionospheric model computed prior to the loss of the first frequency signal.

There are several aspects of these limitations not taught by Lin. Prior to reading the following explanation, the Examiner is requested to re-read paragraphs 0148 through 0157 of Lin. In particular, the Examiner is asked to focus on what Lin teaches about signal processing when both L1 and L2 are available, and what Lin teaches about signal processing when only one of the L1/L2 signals are available.

The entire focus of these remarks concerns the differences between the portion of the claimed method of performing “backup navigation” and what Lin teaches. In paragraphs 0148 through 0152, Lin teaches the use of wide lane techniques when both L1 and L2 are available. On the other hand, when only one frequency is available, Lin teaches using only the single frequency data and the geometrical distance derived from data output by the Kalman filter and the satellite prediction model 502 to resolve ambiguities. See 0152 of Lin. Furthermore, in the paragraphs following 0152, Lin makes absolutely no distinction, with respect to operation of the ionospheric model 501 or the ambiguity resolution block 504, between single and dual modes of operation.

These teachings of Lin are inconsistent with the claimed method of backup navigation, such as in claim 1, which specifically requires (A) using a synthesized carrier-phase measurement on the first frequency (i.e., the missing frequency signal), and (B) corrections from the ionospheric model computed prior to the time period in which the backup navigation is being performed.

First, Lin specifically teaches using only the second frequency for navigation when the first frequency is unavailable. Thus Lin teaches switching over to simple single frequency navigation, as opposed to the claimed method that replaces the missing frequency with synthesized carrier-phase measurements. Furthermore, Lin does not teach computing synthesized carrier-phase measurements for a first frequency using the actual carrier-phase measurements on the second frequency.

Second, Lin teaches a process of continuous computation of the ionospheric model, without mentioning any special steps to be taken when switching from dual frequency navigation to single frequency navigation due to loss of one of the two signals. In particular, during single frequency navigation, Lin uses corrections to the ionospheric model computed concurrently during single frequency navigation. This is contrary to the specific requirements of claim 1, and the other independent claims, which require use of “the corrections to the ionospheric model computed prior to the time period” when performing backup navigation. (emphasis added).

Claims 9 (as amended) and 17, and the pending dependent claims, are patentable over Lin for at least the same reasons as explained above.

CONCLUSION

In light of the above amendments and remarks, the Applicant respectfully requests that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney at (650) 843-7501, if a telephone call could help resolve any remaining items.

Respectfully submitted,

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Gary S. Williams

31,066
(Reg. No.)

MORGAN, LEWIS & BOCKIUS LLP
2 Palo Alto Square, Suite 700
3000 El Camino Real
Palo Alto, California 94306
(650) 843-4000